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# Including Indigenous Language in the Mathematics Classroom

Presented by Erin Eastwood & Isabelle Beauvais

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Indigenous communities have developed unique mathematical ways of knowing based on their needs and their environment. Creating an environment that allows students to bring forth elements from their home language fosters a culturally responsive classroom. By familiarizing ourselves with the language and its structure, we, as teachers, are able to better understand how students might think about a concept.

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## The Six Domains for the Development of Mathematical Knowledge in All Cultures<sup>1</sup>

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**Counting:** The system use of methods to compare and order sets of objects

**Localization:** The exploration of one's spatial environment and the symbolization of that environment with the help of models, diagrams, drawing, words, or other means.

**Measuring:** The use of objects or measuring tools to quantify dimensions.

**Design:** The creation of forms for an object or for decorating an object.

**Games:** The development of games and the more or less formal rules that the players must follow.

**Explanation:** Finding different ways of explaining a phenomenon, whether religious, animist, or scientific.

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<sup>1</sup> Poirier, L. (2007). Teaching Mathematics and The Inuit Community. *Canadian Journal of Science, Mathematics and Technology Education*, 7(1), 53-67.

## **A Collaborative Approach: Including the Students and their Community**

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**A welcoming environment and communication is  
key.**

The students and the community are the teachers. Their input will help you develop a better grasp of their conceptual understandings of mathematical concepts.

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### **Ways to Successfully Modify Instruction: Maximizing Indigenous-Language Speaking Students' Learning.**

Be open to learning , introducing, and integrating terms in student's first language.

Explore authentic resources that will add to your personal knowledge.

Pre-assess students to gage their ways of conceptualizing a concept.

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### **Ways to Discover: The Diverse Ways of Conceptualizing Mathematical Concepts**

Think-Write-Share

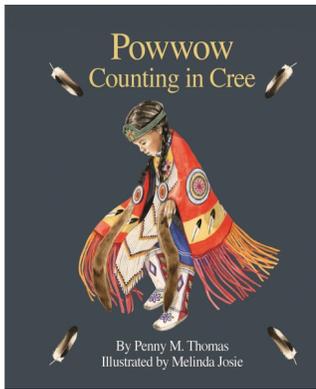
Activating Gist and Word Association

Sharing Circle

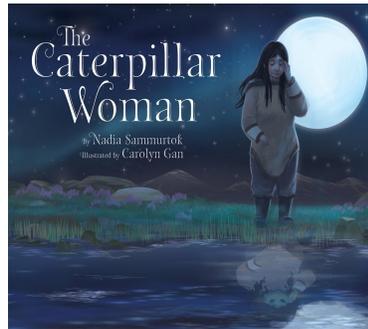
Inviting members of the community to participate in classroom activities

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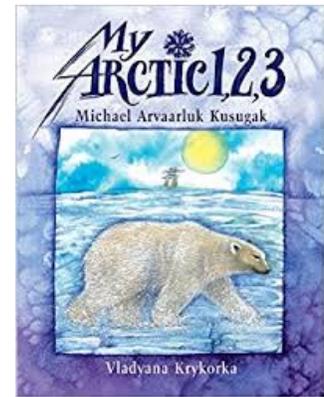
## **Resources**



**Powwow Counting In Cree**  
Author: Penny M. Thomas  
Illustrator: Melinda Josie



**The Caterpillar Woman**  
Author: Nadia Sammartok  
Illustrator: Carolyn Gan



**My Arctic 1,2,3**  
Author: Michael Arvaarluk Kusugak  
Illustrator: Vladyana Kryorka

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## Websites

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### **The Robertson Program**

*Activities developed collaboratively with Rainy River School Board and the First Nations Communities which it serves, focused on math concepts that are embedded in local cultural practices.*

<https://wordpress.oise.utoronto.ca/robertson/family-math-nights/>

### **Math Central**

*Mathematical games from the Aboriginal People of North America, foster problem solving, patterns and relations, probability, numbers and operations, geometry, critical thinking, and data management.*

<http://mathcentral.uregina.ca/RR/database/RR.09.00/treptau1/mathcontent.html>

### **Aboriginal Mathematics K-12 Network**

*Improve mathematics education for Aboriginal learners. Access a variety of lessons and resources developed to integrate mathematics in culturally relevant ways.*

<http://blogs.ubc.ca/aboriginalmathnetwork/about/>

### **Ontario First Nation, Métis, and Inuit Education Policy Framework**

*Framework intended to improve Aboriginal students outcomes by providing quality education from a holistic and integrated approach.*

<http://www.edu.gov.on.ca/eng/aboriginal/fnmiFramework.pdf>